

## ABSTRACT

In a plasma processing apparatus including: a process chamber 3; a light-receiving part 11 for receiving a plasma emission; a spectrometer unit 13 for performing a spectrometry on the plasma emission to convert the same into a multi-channel signal; a signal converting unit 14 for converting the multi-channel signal into one signal using a filter vector stored in a database 15; and a processing unit 16 for determining a condition in the process chamber based on the resulting signal, the condition in the process chamber is determined in such a manner that differences between principal component scores derived from plasma emission data on a lot of substrates by multivariate analysis and principal component scores for the preceding lot of substrates are found, an average value of the differences in one lot, a difference between a maximum and a minimum of the differences in one lot and a standard deviation of the differences in one lot are determined, and the values are compared with a preset threshold.